

Patent Claims

1. Method for monitoring the functioning of sensors for the measuring and monitoring of state parameters of liquids or gases, especially in the field of process measurement technology, for example of electrochemical, electrophysical or optical sensors, wherein the sensor is placed at time intervals in a test state and test parameters are registered, or test parameters are registered at time intervals during the course of registering measured values, characterized in that the registered test parameters are stored and that, for performing the functional monitoring, a backwards-looking, chronological development of the stored test parameters is evaluated and that the development of sensor behavior to be expected in the future is predicted therefrom and information concerning the duration of the remaining, disturbance-free operation of the sensor is obtained.
2. Method as claimed in claim 1, characterized in that, for evaluating the backwards-looking, chronological development of the stored test parameters, non-linear interpolation methods are used, in order to obtain a function describing the sensor behavior.
3. Method as claimed in claim 1 or 2, characterized in that, for a particular sensor, a function is specified and used, which reproduces the experience-based sensor behavior.
4. Method as claimed in claim 3, characterized in that the function involves a polynomial function.
5. Method as claimed in one or more of the preceding claims, characterized in that a first predictive value is determined for the wear limit.
6. Method as claimed in one or more of the preceding claims, characterized in that it is tested, whether the wear limit will be reached before the next registering of test parameters.

7. Method as claimed in one or more of the preceding claims, characterized in that it is tested, whether a predictively obtained value of the test parameter lies within a warning range this side of the wear limit as defined to this time.

8. Method as claimed in one or more of the preceding claims, characterized in that, on the basis of the information concerning the duration of the remaining, disturbance-free operation, measures for maintenance are determined and issued and/or displayed and, where necessary, initiated.

9. Method as claimed in one or more of the preceding claims, characterized in that, on the basis of the information concerning the duration of the remaining, disturbance-free operation, a predictive point in time for replacement of the sensor is determined and, where appropriate, issued.

10. Method as claimed in one or more of the preceding claims, characterized in that, as test parameter, the slope of the sensor signal, or signals, in a particular test state of the sensor is registered and evaluated.

11. Method as claimed in one or more of the preceding claims, characterized in that, as test parameter, the zero point of the sensor signal, or signals, in a particular test state of the sensor is registered and evaluated.

12. Method as claimed in one or more of the preceding claims, characterized in that, as test parameter, the internal resistance of an electrode is registered and evaluated.

13. Method as claimed in one or more of the preceding claims, characterized in that, as test parameter, the change of the dynamic behavior of signals produced by the sensor itself is registered and evaluated.

14. Method as claimed in one or more of the preceding claims,

characterized in that a plurality of different test parameters are registered and evaluated.

15. Method as claimed in one or more of the preceding claims, characterized in that, for the evaluating, sensor specific, basic data from a storage arrangement of the sensor or the measured value transmitter are obtained over the Internet or over update media and used.